REMARKS

The Examiner has rejected claims 1 – 8 and 10 under 35 USC 102(a) as being anticipated by Nishihara (JP 2002-25 643 A) and she has rejected claims 1 – 7 and 10 under 35 USC 102(c) as being anticipated by Okamoto et al. (US 2004/019 49 42A1).

Nishihara (JP 2002 – 256453) discloses a method for joining an upper workpiece (6) and a lower workpiece (5) wherein the material of the upper workpiece (6) is plasticized by a rotating friction welding tool (2). The plasticized material then flows into cavities (5a) formed in the lower workpiece along the path of transverse movement C – D of the welding tool (2) for engagement of the two workpieces.

It is not said how far exactly the tool (2) moves into, or through the upper workpiece and it can certainly not be taken from this reference that for example the tip of the friction welding tool is stopped exactly when it reaches the top surface of the lower workpiece.

Okamoto et al. (US 2004/0194942 A1) discloses a method of manufacturing a cooling plate including a coolant passage formed into the plate body and covered by a lid 2. The lid 2 is welded onto the plastic body 1 by friction stir welding wherein a welding tool (6) is moved along the edge of the lid 2 with the tip 8 of the tool 6 being moved along the seam between the lid and the plate body 1 so as to melt the adjacent portions of the plate body 1 and the lid 2 and forming a weld joint.

This reference is really not concerned with the friction stir welding method as such but rather with the formation of the cooling channel in the cooling plate. The point herein is that the lid extends beyond the edges of the cooling channel 4 and the weld is formed by friction stir welding at a distance from the end walls of the channel so that no melted material can not flow into the channel and form an obstruction therein. The friction stir welding method as such is the common welding method wherein the materials of the members forming the joint are melted and intermixed so as to form the weld joint after cooling.

Neither of the cooling references discloses that the rotating tool is moved axially through an uppermost workpiece (13) toward the lowermost workpiece (14) while the material of the uppermost workpiece is plasticized only until the rotating tool contacts the top surface of the lowermost workpiece (14) so as to produce, due to friction of the pin-like projection (11) on the surface of the lowermost workpiece (14) a metallurgically clean surface, whereby a gas- tight

joint is formed between the upper and the lower most workpieces (13, 14) upon removal of the rotating tool (10).

Concerning the Examiner's comment on page 4, first paragraph of the official action as to how the members would bond with no plasticizing of the lower member – when the conventional friction stir process plasticizes both flat members so as to form a strong joint, it is noted that – contrary to the conventional friction stir process – with the method according to the present invention, no mixing of the materials of the upper and lower workpieces is desired; rather a so-called diffusion weld joint is formed, wherein individual atoms of one workpiece diffuse into the other workpiece so as to form a stable connection between the workpieces. To this end, it is not necessary or desirable that also the lower workpiece is plasticized. It is however important that a metallurgically clean surfaces are provided in order to enhance the diffusion of the individual atoms from one workpiece into the other.

Since none of the references cited discloses the method as now more distinctly defined in claim 1, claim 1 as amended should be patentable and reconsideration of the rejection of claim 1 under 35 USC 102 as being anticipated by the cited references is respectfully requested.

Furthermore, as none of the references discloses the method as defined in amended claim 1, a combination of the references will not lead a person skilled in the art to the method as defined in claim 1 so that claim 1 cannot be considered to be obvious from the cited references either.

The dependent claims 2 – 8 and 10 relate to features which are considered to be advantageous in connection with the method as defined in claim 1. These claims are all directly or indirectly dependent on claim 1 and consequently, include all the features of claim 1 so that they ought to be considered to be patentable together with claim 1.

Reconsideration of claims 2 – 8 and 10 is respectfully requested and allowance of claims 1 – 8 and 10 is solicited.

Respectfully submitted,

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